



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/868,874	04/15/2002	Steffen Schmid	08256.0148	1265

23859 7590 06/10/2003

NEEDLE & ROSENBERG P C
127 PEACHTREE STREET N E
ATLANTA, GA 30303-1811

EXAMINER

PETKOVSEK, DANIEL J

ART UNIT	PAPER NUMBER
----------	--------------

2874

DATE MAILED: 06/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/868,874

Applicant(s)

SCHMID, STEFFEN

Examiner

Daniel J Petkovsek

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-44 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 23, 25-34, and 38-44 is/are rejected.
- 7) ☒ Claim(s) 24 and 35-37 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on April 15, 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Priority

1. This application is a 371 of PCT/EP99/10039, filed on 12/17/1999, which claims benefit of provisional 60/115,633, filed on 01/12/1999. A foreign application has been filed with the EPO, under 98124698.6 on 12/24/1998.

Information Disclosure Statement

2. The prior art documents submitted by Applicant in the Information Disclosure Statements filed on October 2, 2001, have been considered and made of record (note attached copy of forms PTO-1449).

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
4. The abstract has been re-written by ISA.

Claim Objections

5. Claim 35 is objected to because of the following informalities: in the last segment, "the first *calculator*" should read, "the first *circulator*". Appropriate correction is required.

Allowable Subject Matter

6. Claims 24, and 35-37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The relevant prior art does not teach or reasonably suggest an add/drop multiplexer having a second circulator, with, in order of rotation, a filter port coupled to

Art Unit: 2874

the third optical port, a drop port, and an add port. Dependent claims 35-37 from claim 24 are also objected to as being allowable if including claim 24 in the base claim and any intervening claims.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 23, and 25-34 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the claim is drawn to an acousto-optical add/drop multiplexer, however, no limitations exist in which the adding or dropping of optical signals occurs.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 41-44 are rejected under 35 U.S.C. 102(e) as being anticipated by Seino U.S.P.

No. 6,243,516.

Seino U.S.P. No. 6,243,516 teaches (Figs. 26 and 27, column 14 line 57 through column 16 line 33) a device (and inherent method of using same) in which optical signals can be multiplexed by providing AOTF's 1 and 2 with a plurality of polarization splitters 17 in which switching occurs between arms of the PBS, while reflecting of the optical signal back through the switch as well as adding/dropping (and combining as such with different plurality of optical signals inherently available) new optical signals that can be coupled to the first polarization splitter, which clearly, fully meets Applicant's claimed limitations of the method.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 23, 25-34, and 38-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmid et al EP 0,768,555 A1, and further in view of Chang et al. U.S.P. No. 5,611,004.

Schmid et al EP 0,768,555 A1 teaches (Fig. 1, column 6 line 56 through column 11 line 33) an acousto-optical switch on a birefringent and photo-elastic substrate comprising: a first port 71 coupled to a first polarization splitter 2, first and second acousto-optical polarization regions 150 and 160 coupled between the first splitter 2 and second polarization splitter 3, second splitter 3 coupled to 2nd and 3rd ports 131 and 141. Schmid et al. '555 does not explicitly teach that the device has a first circulator having an input port, switch port coupled to the first optical port, and an output port; or has a reflecting device coupled to the second optical port.

Chang et al. U.S.P. No. 5,611,004 teaches (Figs. 6, 7; column 9 line 46 through column 10 line 52) an acousto-optical filter 31 having first and second waveguide regions in which a circulator 71 has an input port, switch port coupled to polarization splitter 37, and an output port; and a reflecting device 67 coupled to the second optical port 41. The reflecting/circulator device of Chang et al. '004 teaches the advantage of having two stages of signal filtering without increasing the substrate size of the acousto-optical waveguide region.

Since Schmid et al. '555 and Chang et al. '004 are both from the same field of endeavor, the purpose of having two stages of filtering without increasing the substrate size of the acousto-optical waveguide region disclosed by Chang et al. '004 would have been recognized in the pertinent art of Schmid et al. '555.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to include the reflecting surface and circulator of Chang et al. '004 into the acousto-optical switch of Schmid et al. '555 for the purpose of having two stages of filtering without increasing the size of the substrate of the optical waveguide region.

Regarding claims 25-27, the device of Schmid et al. '555 teaches forms for transmission of orthogonal components, as well as first and second transducers (summary). Regarding claim 28, it is well known in the art to couple optical signals to optical ports using optical fibers for reduced transmission loss. Regarding claims 29 and 30, substrate integrated (and slant polishing of optical signals thereof) mirrors are well known in the art to deflect optical signals for uniform manufacturing and size. Regarding claims 31-34, a Faraday rotator 65 is used for polarization mode dispersion compensation of the back-reflected signal. Other forms as claimed for the

Art Unit: 2874

birefringent elements acting upon optical signal are well known forms to compensate for PMD in the art. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use a number of birefringent elements to compensate for PMD of the optical signal, since no statement is made on how any of these elements would result in any functional advantage in this particular device. .

Regarding claims 38-40, the limitation of having two acousto-optical switches comprised on a substrate with only one optical port coupled to the first polarization splitter is an obvious modification of the combination of Schmid et al. '555 with Chang et al. '004. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use a plurality of acousto-optical switches for the purpose of creating multiple stages of signal filtering. The use of *only one* optical port coupled to the first polarization splitter is an obvious modification to person having ordinary skill in the art, since it is well known in the art to split a single incoming optical signal with a PBS to orthogonally polarize an optical signal. Regarding method claims 41-44, the methods are inherent from the device to switch and multiplex optical channels, as signal are added/dropped continuously with the filtering principles of the filtering device combined with the added reflected signal.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, with respect to the state of the art of acousto-optical waveguides using polarization beam splitters: PTO-892 form references B-M.

Art Unit: 2874

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J Petkovsek whose telephone number is (703) 305-6919. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (703) 308-4819. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 872-9321.



Daniel Petkovsek
June 3, 2003



Brian Healy
Primary Examiner